

AMENDMENTS TO THE CLAIMS

Please amend the claims as indicated hereafter.

Claims:

1-14.(Previously canceled).

15. (Currently amended) A method of joining electrically conductive materials, which comprises the step of applying an adhesive composition to said materials to provide a stable electrical contact resistance comprising:

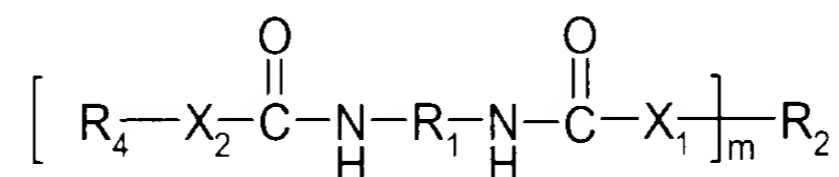
an epoxide-modified polyurethane resin;

a cross-linking agent;

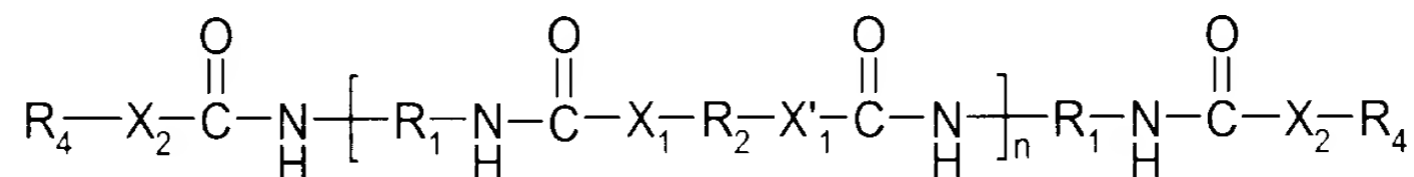
an adhesion promoter in an amount sufficient for promoting adhesion of the adhesive to a substrate; and

a conductive filler.

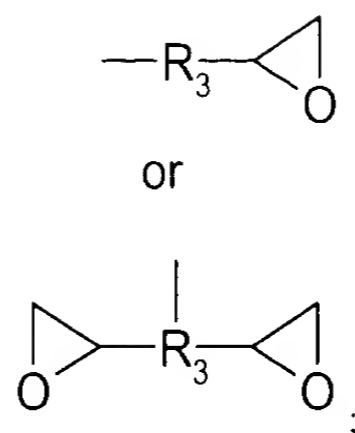
16. (Previously presented) The method of Claim 15, wherein the epoxide-modified polyurethane resin has the following structure:



or



where m is 2 or 3; n is one or greater; R₁ is an aliphatic hydrocarbon radical, a cycloaliphatic hydrocarbon radical, an aromatic hydrocarbon radical, or an araliphatic hydrocarbon radical; R₂ is an aliphatic hydrocarbon radical, a cycloaliphatic hydrocarbon radical, an alkoxy radical, a polyester; or a polyether; R₄ is either:



R₃ is an aliphatic hydrocarbon radical, a cycloaliphatic hydrocarbon radical, an alkoxy radical, a polyester, or a polyether; and X₁ and X₂ are either a single bond, -O-, -COO-, -NH-, or -S-; wherein the cross-linking agent is a carboxylic acid anhydride cross-linker, and the conductive filler is silver flakes.

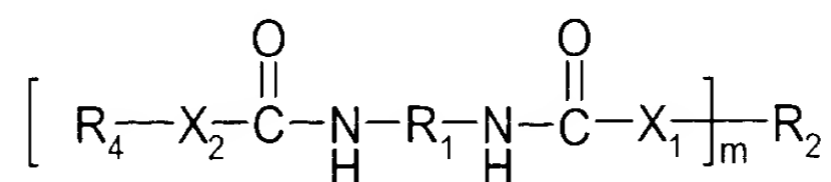
17. (Withdrawn) The method of Claim 16, wherein the composition further comprises one or more of (e) an epoxy resin; (f) a catalyst; and (g) a diluent.

18. (Previously presented) The method of Claim 16, wherein the electrically conductive materials are present on a printed circuit board.

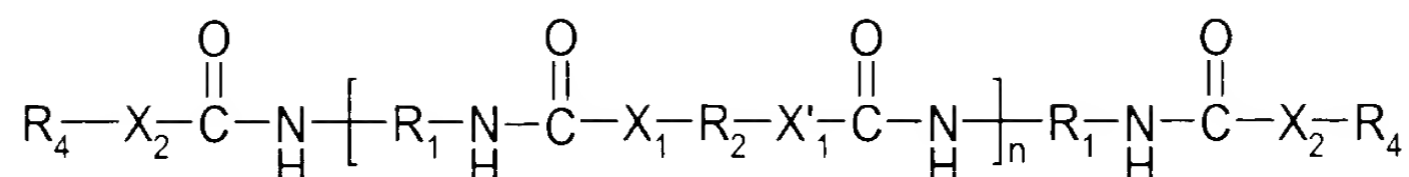
19.-20. (Canceled).

21. (Withdrawn) A circuit board comprising of:

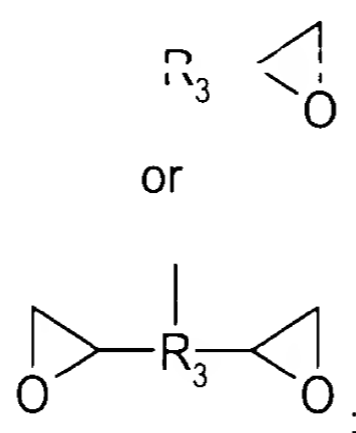
a chip attached to said circuit board by an electrically conductive adhesive,
 wherein said electrically conductive adhesive comprises of, an epoxide-modified
 polyurethane resin, a cross-linking agent, an adhesion promoter, and a conductive filler,
 wherein said epoxide-modified polyurethane resin has the following structure:



or



where m is 2 or 3; n is one or greater; R_1 is an aliphatic hydrocarbon radical, a cycloaliphatic hydrocarbon radical, an aromatic hydrocarbon radical, or an araliphatic hydrocarbon radical; R_2 is an aliphatic hydrocarbon radical, a cycloaliphatic hydrocarbon radical, an alkoxy radical, a polyester; or a polyether; R_4 is either:



R_3 is an aliphatic hydrocarbon radical, a cycloaliphatic hydrocarbon radical, an alkoxy radical, a polyester, or a polyether; and X_1 and X_2 are either a single bond, $-O-$; $-COO-$; $-NH-$; or $-S-$.

22. (Withdrawn) The circuit board as defined in Claim 21, wherein the cross-linking agent is selected from the group consisting of aliphatic amines, aromatic amines, carboxylic acid anhydrides, thiols, alcohols, phenols, isocyanates, tertiary amines, boron complexes, inorganic acids, hydrazides, imidazoles and their derivatives, and modified products thereof.

23. (Withdrawn) The circuit board as defined in Claim 22 wherein the cross-linking agent is a carboxylic acid anhydride cross-linker.

24. (Withdrawn) The circuit board as defined in Claim 21, wherein the cross-linking agent is selected from the group consisting of liquid imidazoles and anhydrides.

25. (Withdrawn) The circuit board as defined in Claim 21, wherein the adhesion promoter is selected from the group consisting of alkylchlorosilanes, dialkyldichlorosilanes, alkyltrichlorosilanes; organosilane esters; vinylsilanes; aminoalkylsilanes; diaminoalkylsilanes; styrylaminoalkylsilanes; ureidoalkylsilane esters; epoxyalkylsilane esters; alkoxyalkylsilanes;

acryloxyalkylsilane esters; methacryloxyalkylsilane esters; and mercaptoalkylsilane esters, and combinations thereof.

26. (Withdrawn) The circuit board as defined in Claim 21, wherein said conductive filler is a solid metal particle selected from the group of nickel, copper, aluminum, palladium, silver, gold, and platinum.

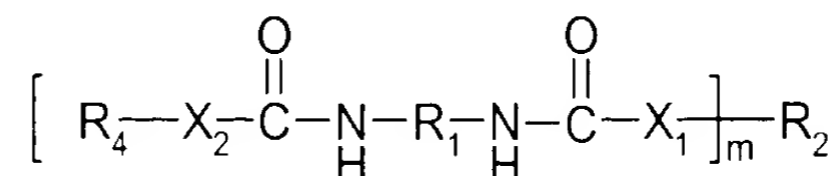
27. (Withdrawn) The circuit board as defined in Claim 26, wherein said conductive filler is silver flakes.

28. (Withdrawn) The circuit board as defined in Claim 21, wherein said conductive filler is selected from the group consisting of carbon black, carbon fiber, and graphite.

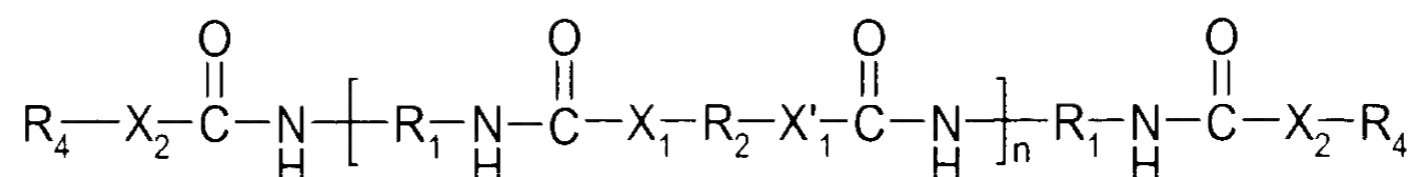
29. (Withdrawn) The circuit board as defined in Claim 21, further comprising one or more of (e) an epoxy resin; (f) a catalyst; and (g) a diluent.

30. (Presently amended) A method of joining electrically conductive materials, ~~which comprises of~~ comprising: applying an electrically conductive adhesive composition to at least one of said electrically conductive materials, wherein said electrically conductive adhesive composition ~~consists of~~, comprises an epoxide-modified polyurethane resin, a cross-linking agent, an adhesion promoter, and a conductive filler,

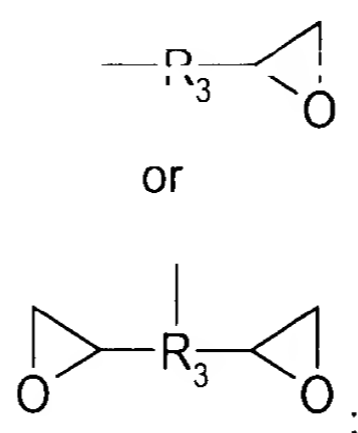
wherein said epoxide-modified polyurethane resin has the following structure:



or



where m is 2 or 3; n is one or greater; R_1 is an ~~aliphatic hydrocarbon radical~~, a cycloaliphatic hydrocarbon radical, an aromatic hydrocarbon radical, or an araliphatic hydrocarbon radical; R_2 is an aliphatic hydrocarbon radical, a cycloaliphatic hydrocarbon radical, an alkoxy radical, a polyester; or a polyether; R_4 is either:



R_3 is an aliphatic hydrocarbon radical, a cycloaliphatic hydrocarbon radical, an alkoxy radical, a polyester, or a polyether; and X_1 and X_2 are either a single bond, $-O-$; $-COO-$; $-NH-$; or $-S-$.

31. (Previously presented) The method of claim 30 wherein said electrically conductive materials are at least one of the following; a chip and a printed circuit board.

32. (Withdrawn) The method of claim 30 wherein said electrically conductive adhesive composition further comprises of at least one of the following; an epoxy resin, a catalyst, and a diluent.

33. (New) The method of claim 15, wherein the adhesion promoter is selected from the group consisting of alkylchlorosilanes, dialkyldichlorosilanes, alkyltrichlorosilanes; organosilane esters; vinylsilanes; aminoalkylsilanes; diaminoalkylsilanes; styrylaminoalkylsilanes; ureidoalkylsilane esters; alkoxysilanes; acryloxyalkylsilane esters; methacryloxyalkylsilane esters; and mercaptoalkylsilane esters, and combinations thereof.

34. (New) The method of claim 15, wherein the adhesion promoter is (3-glycidoxypropyl)trimethoxysilane.